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Two new deep-sea tanaidacean genera, *Isopodidus* and *Cetiopyge* (Crustacea: Peracarida) from the Gulf of Mexico

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Abstract.—Two new genera and species, *Isopodidus janum* and *Cetiopyge mira* were found during an investigation of the deep-sea tanaidacean fauna of the Gulf of Mexico. *Isopodidus janum* is characterized by an isopod-like body shape and fused abdomen. *Cetiopyge mira* superficially resembles *Expina typica* and *Mirandotanais vorax* due to the enlarged abdomen, but is unique in that the abdomen is laterally compressed in *Cetiopyge* and cylindrical in the two other taxa. Despite the unresolved nature of tanaidacean phylogeny, both new genera can tentatively be assigned to the family Colletteidae.

Pequegnat, et al. (1990) reported that the diversity of Tanaidacea from the deep waters of the Gulf of Mexico was very high. These authors reported the presence of more than 180 species, most apparently new to science, from the northern slope and abyssal zone in depths reaching 3850 m. These findings, plus those of the present study, support the assertion by Larsen (2001) that the biodiversity of deep-water Tanaidacea has been grossly underestimated. Specific information on deep-water tanaidaceans from the Gulf of Mexico is limited to the reports of Gardiner (1975), Sieg & Heard (1989), Meyer and Heard (1990), and Viskup & Heard (1989), which together documents only five taxa.

As part of a study of deep-water biodiversity conducted by Texas A&M University, we have thus far discovered over 180 species of Tanaidacea. This material represents a large number of new taxa and will form an integral part of a comparative biodiversity study of the shallow and deep-water tanaidacean faunas in the Gulf of Mexico.

Among the new species of Tanaidacea examined by us, two differed noticeably form the usual tanaidacean body form. We consider these two species to represent new genera referable to the recently established family Colletteidae Larsen & Wilson, 2002. The designations and descriptions of these two new taxa are the subjects of this report.

Holotypes and paratype have been deposited in the National Museum of Natural History, Washington (USNM). Additional paratypes were deposited in the Gulf Coast Research Laboratory Museum (GCRL).

Family Colletteidae Larsen & Wilson, 2002

Genus *Isopodidus*, new genus

Diagnosis (female).—Body dorso-ventrally flattened and semicylindrical. Cephalothorax as long as combined length of first 5 pereonites. Antennule with 4 articles. Antenna with 6 articles. Mandible molar well developed. Maxillule with some bifurcate terminal setae. Labium consists of 1 pair of lobes without lateral and medial processes. Maxilliped basis not fused distally, endites not fused; with 1 minute distal denticle and narrow than basis. Chelipeds attached ventrally by a sidepiece. Pereopods without coxa, dactylus and terminal setae never longer than propodus. Pereopod 4 to 6 dactylus

and unguis not fused to a claw. Pereon and pleotelson fused. Pleopods present, sitting in niches created by inner septum of pleonite wall; with simple setae only. Uropods small, exopod partially fused with protopod, endopod consisting of 2 partially fused articles. Males unknown.

Etymology.—Genus name reflects the similarity in shape with the isopods, (Greek *Isopod + idus* = Isopod + like). Gender neuter.

Type species.—Isopodidus janum.

Remarks.—Isopodidus is unique by having a fused, almost carapace-like pleon. Other tanaidomorphan species with pleon fusion are *Anarthrura simplex* G. O. Sars, 1882 and *Metagathotanais insulcatus* Bird & Holdich, 1988, but both display strikingly different characters. Both species differ by having the usual elongated tanaid body shape, rudimentary mandibular molar, lack of pleopods in the female and cheliped attached without a sidepiece. Also these two species have not been recorded with bifurcate terminal setae of the maxillule, although this character can be easily overlooked. *Anarthrura simplex* differs further in the longer, more developed uropod. *Metagathotanais insulcatus* also differs in the slender basis of its cheliped.

Isopodidus janum, new species
Figs. 1, 2

Diagnosis.—The genus is monotypic, diagnosis is identical to the generic diagnosis.

Etymology.—Named after the Roman god Janus, which had two faces, as an analog to the impression of a carapace in both ends (Latin *janum* = neuter form of janus)

Material examined.—Holotype, non-ovigerous female (USNM 1001211), body length 1.20 mm. Paratypes: 1 non-ovigerous female (USNM 1001212). Station MT3–1, 16-Jun-00, 28°13.2246′N, 89°29.7679′W, depth 983 m. Collected by Texas A&M University staff. Other material: 1 non-ovigerous female. Station W3–1, 14-May-00, 27°19.3711′N, 93°19.3081′W, depth 860 m.

Description of holotype.—Body (Figs. 1A, 1B) dorso-ventrally flattened, 2.7 times as long as broad. Cephalothorax as long as combined length of pereonite 1–5. Eye lobes absent. Pereonites all at least 4.5 times as wide as long. Pleon almost as long as carapace. All pleonites fused with pleotelson. Pleonites demarcated on inner surface by septum. All pleonites bearing small pleopods. Pleotelson posterior margin angled, converging to widely rounded apex.

Antennule (Fig. 1C) shorter than cephalothorax. Article 1 as long as rest of antennule, with 2 simple distal setae. Article 2 length half of article 1, with 3 simple distal setae. Article 3 length half of article 4, with 2 simple distal setae. Article 4 length one-third of article 1, with 3 long and 2 small simple distal setae.

Antenna (Fig. 1D) almost as long as antennule. Article 1 not recovered or illustrated but only marginally broader than following articles. Article 2 length about one-third of article 4, with 1 simple distal seta. Article 3 shorter than article 2, smooth. Article 4 longer than other articles, with 3 simple and 2 sensory distal setae. Article 5 as long as article 2, with 1 distal simple seta. Article 6 minute with 3 distal setae and 2 aesthetascs.

Labrum (Fig. 1E) smooth and with flat apex.

Mandibles with relatively broad molar process with distal denticles and spiniform process. Right mandible (Fig. 1F) incisor broad, with 1 large and blunt denticle and several dorsal spines. Left mandible (Fig. 1G) lacinia mobilis as broad as incisor; incisor with 3 pointed denticles.

Maxillule (Fig. 1H) endite with 11 distal spiniform setae, 2 of which are bifurcate. Palp not recovered.

Maxilla (Fig. 1I) ovoid with 2 small distal setules.

Labium (Fig. 1J) apex rather blunt with few setules.

Maxilliped (Fig. 1K) endites with 1 small

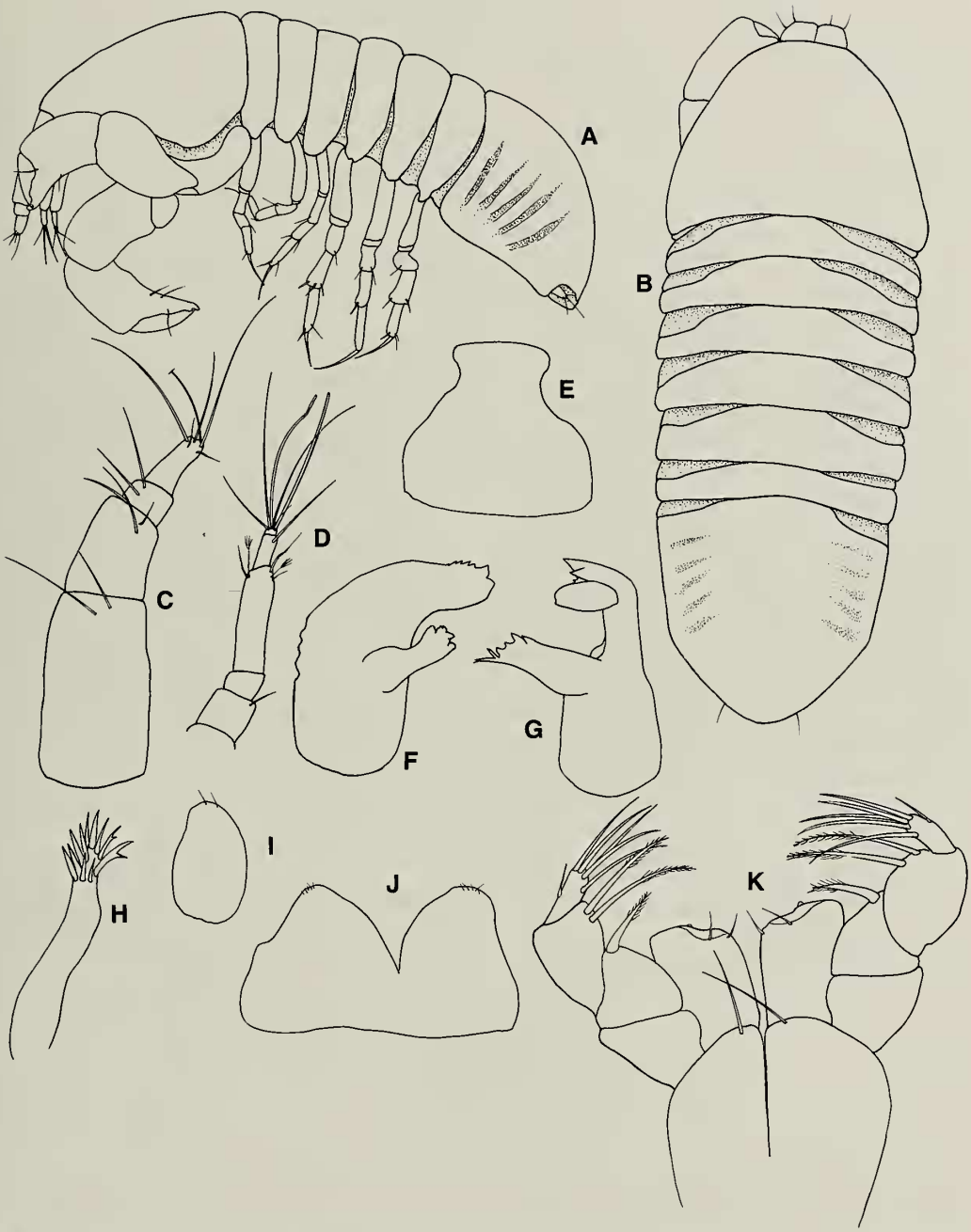

Fig. 1. *Isopodidus janum* n. sp. A, Lateral view. B, Dorsal view. C, Antennule. D, Antenna. E, Labrum. F, Right mandible. G, Left mandible. H, Maxillule. I, Maxilla. J, Labium. K, Maxilliped.

denticle and 2 simple distal setae. Basis not fused distally. Palp article 1 smooth; article 2 with 1 thick setulated inner seta; article 3 with 2 thick setulated inner setae; article 4 with 4 distal thick inner setae and 1 small outer seta.

Epignath not recovered.

Cheliped (Fig. 2A) basis divided un-

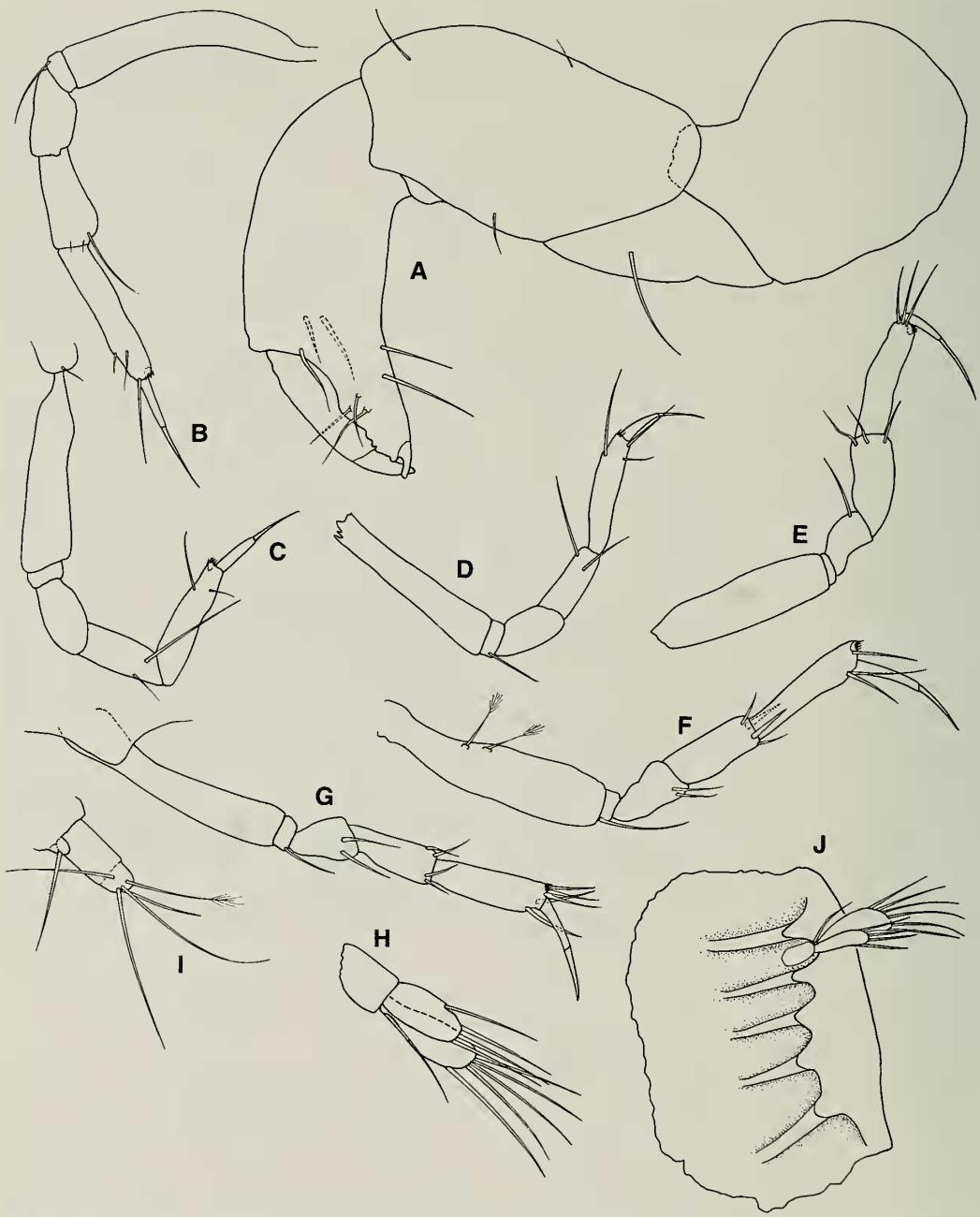

Fig. 2. *Isopodidus janum* n. sp A, Cheliped, B, Pereopod 1. C, Pereopod 2. D, Pereopod 3. E, Pereopod 4. F, Pereopod 5. G, Pereopod 6. H, Pleopod. I, Uropod. J, Inner view of pleopod attachment.

equally by sclerite, shorter than carpus. Merus with proximal depression, with 1 ventral seta. Carpus as long as propodus inclusive fixed finger, with 1 ventral and 2 dorsal setae. Propodus slender, with 3 setae near dactylus insertion. Fixed finger with 2 ventral setae and 3 on inner margin. Dactylus marginally longer than fixed finger.

Pereopod 1 (Fig. 2B) basis longer than 3 succeeding articles together, smooth. Ischi-

um with 1 small ventral seta. Merus shorter than carpus, smooth. Carpus 2 thirds length of propodus, with 1 distal seta and few setules. Propodus longer than half-length of basis, with 1 distal and 2 subdistal simple setae and with dorsal ring of small spines around dactylus insertion. Dactylus and unguis shorter than propodus.

Pereopod 2 (Fig. 2C) as pereopod 1 except: Ischium smooth. Carpus with 2 distal setae.

Pereopod 3 (Fig. 2D) as pereopod 1 except: Carpus with 2 distal setae. Pereopod 4 (Fig. 2E) as pereopod 1 except: Ischium smooth. Merus with 1 distal setae. Carpus with 3 distal setae. Propodus with 3 distal setae and spine ring.

Pereopod 5 (Fig. 2F) as pereopod 4 except: Basis with 2 sensory medial seta. Ischium with ventral seta. Merus with 2 distal setae. Carpus with 2 simple and 2 spiniform distal setae. Propodus with 3 distal setae and dorsal spine ring.

Pereopod 6 (Fig. 2G) as pereopod 4 except: Ischium with ventral seta. Merus with 2 distal setae. Carpus with 4 distal setae. Propodus with 5 distal setae dorsal spine ring.

Pleopods (Fig. 2H) small, all pairs similar. Endopod with 3 distal and 1 inner simple seta. Exopod with 5 distal simple setae and 1 proximal simple seta.

Uropods (Fig. 2I) endopod having 2 incompletely fused articles with 1sensory and 4 simple distal setae. Exopod minute and partially fused with protopod, with 1 simple distal seta.

Cetiopyge, new genus

Diagnosis (female).—Body laterally compressed. Carapace as long as combined length of 2 pereonites. Antennule with 5 articles, distal article being minute. Antenna with 6 articles. Mandible molar broad. Maxillule with some bifurcate terminal setae. Maxilliped basis not fused distally, endites not fused, without denticles and narrower than basis. Chelipeds attached laterally by a sidepiece. Pereopods with coxa and propodus never longer than dactylus and terminal setae combined. Pereopod 4 to 6 dactylus and unguis not fused to a hook-like claw. Distal pereon and pleotelson greatly enlarged and laterally compressed. Pleopods absent in female. Uropods small, exopod minute, endopod consist of 2 partially fused articles.

Etymology.—Named after the enlarged pleotelson (Greek: *Cetio + pyge* = Huge + Buttocks). Gender feminine.

Type species.—*Cetiopyge mira.*

Remarks.—*Cetiopyge* shares the enlarged pleon character with *Mirandotanais* Kussakin & Tzareva, 1974 and *Expina* Lang, 1968 but while these species have a cylindrically expanded pleon, the pleonal expansion of *Cetiopyge* is laterally compressed. Furthermore, *P. mira* can be distinguished from both *Expina* Lang, 1968 and *Mirandotanais* Kussakin & Tzareva, 1974 by having a relatively well developed mandibular molar. The spiniform maxillule setae in *Cetiopyge,* also separates it from *Expina,* which has no terminal setae on maxillule.

Cetiopyge mira, new species
Figs. 3, 4

Diagnosis.—Since the genus is monotypic so far, diagnosis is identical to the generic diagnosis.

Etymology,—Named after the peculiar body shape and problems assigning this genus to family (Latin *mira* = peculiar).

Material examined.—Holotype, non-ovigerous female (USNM 1001209), body length 1.23 mm. Paratype: 1 non-ovigerous female (USNM 1001210). Station W3–1, 14-May-00, 27°19.3711′N. 93°19.3081′W. Depth 860 m. Collected by Texas A&M University staff.

Other material: 1 non-ovigerous female. Station C4-1, 27°27.5640′N, 89°47.1391′W, depth 1455 m. 1 non-ovigerous female. Station C7-2, 27°43.6967′N, 89°58.7782′W, depth 1070 m. 12 non-ovigerous females,

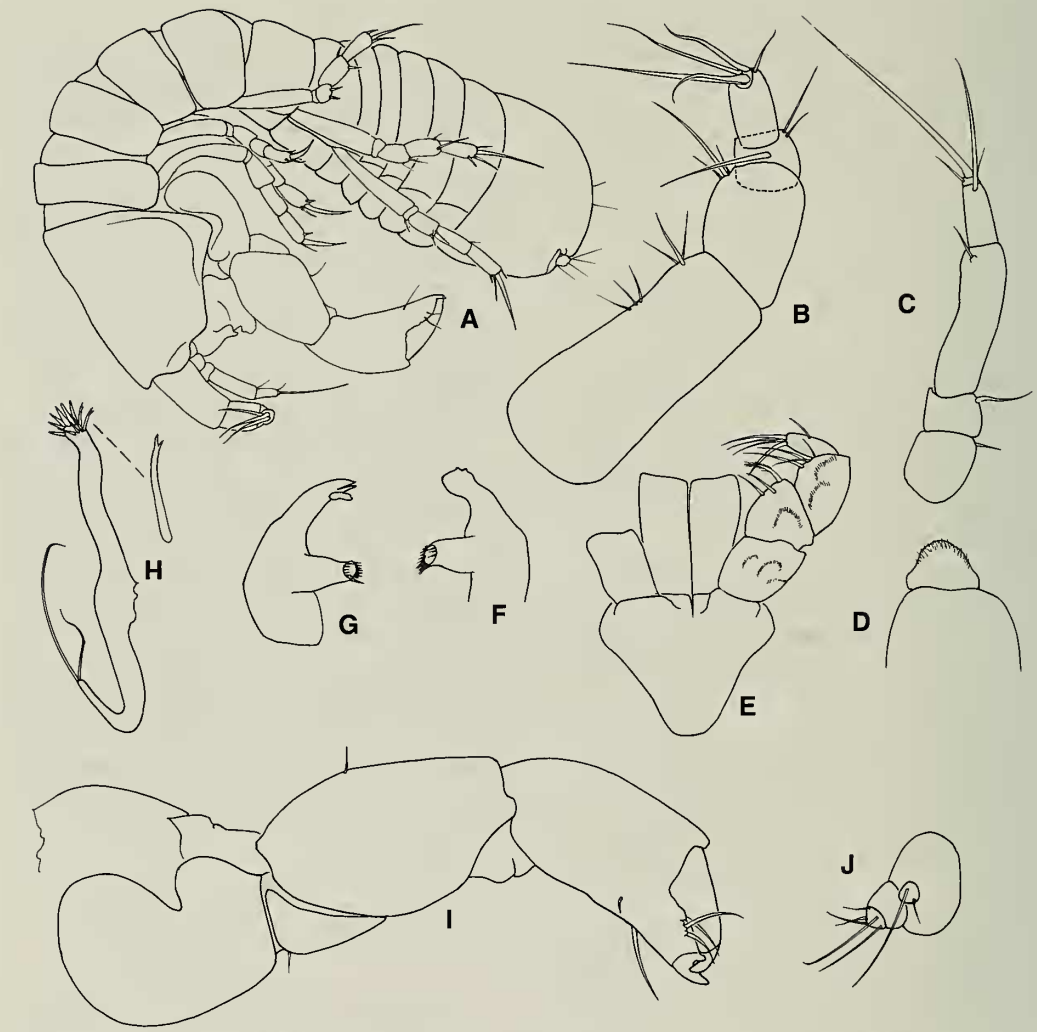

Fig. 3. *Cetiopyge mira* n. sp. A, Lateral view. B, Antennule. C, Antenna. D, Labrum. E, Maxilliped. F, Right mandible. G, left mandible. H, Maxillule. I, Cheliped, J, Uropod

Station MT3-1, 16-Jun-00, 28°13.2246′N, 89°29.7679′W, depth 983 m. 3 non-ovigerous females Station MT3-2, 16-Jun-00, 28°13.1533′N, 89°29.7860′W, depth 987 m. 1 non-ovigerous female. Station MT4-1, 15-Jun-00, 27°49.6198′N, 89°09.9526′W, depth 1401 m. 1 non-ovigerous female. Station NB5-2, 26°15.1137′N, 91°12.6102′W, depth 2060 m. 1 non-ovigerous female. Station RW1-1, 23-May-00, 27°30.0242′N, 96°00.1437′W, depth 213 m. 1 non-ovigerous female. Station RW1-2, 23-May-00, 27°29.9333′N, 96°00.2164′W, depth 213 m. 1 non-ovigerous female. Station RW4-1, 21-May-00, 26°44.8861′N, 95°14.7680′W, depth 1570 m. 3 non-ovigerous females. Station RW5-1, 21-May-00, 26°30.2819′N, 95°00.1866′W, depth 1620 m. 1 non-ovigerous female. Station S35-1, 11-Jun-00, 29°20.0500′N, 87°03.3758′W, depth 658 m. 4 non-ovigerous females. Station S36-1, 12-Jun-00, 28°55.1647′N, 87°40.2232′W, depth 1825 m. 7 non-ovigerous female. Station S36-2, 28°55.1647′N, 87°40.2232′W, depth 1832 m. 1 non-ovigerous female, Station S43-1, 10-Jun-00, 28°30.1055′N,

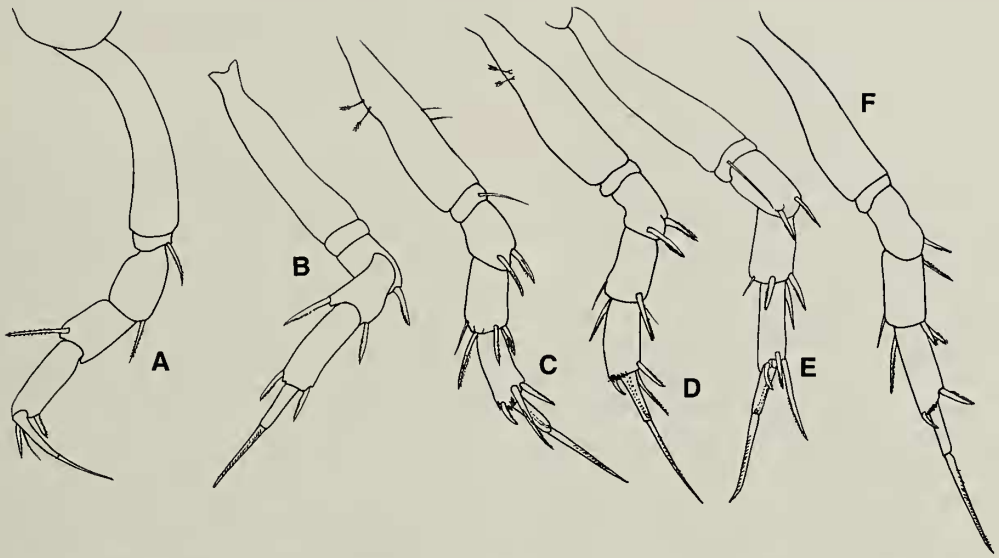

Fig. 4. *Cetiopyge mira* n. sp. A, Pereopod 1. B, Pereopod 2. C, Pereopod 3. D, Pereopod 4. E, Pereopod 5. F, Pereopod 6.

86°04.9983′W, depth 366 m. 1 non-ovigerous female, Station S44-2, 11-Jun-00, 28°45.0140′N, 85°44.9642′W, depth 213 m.

Description of holotype.— non-ovigerous female, body length 1.23 mm. Body (Fig. 3A) laterally compressed, 6 times as long as broad. Cephalothorax as long as combined length of pereonites 1–2. Eye lobes absent. Pereonites all wider than long. Distal pereon enlarged and laterally compressed. Pleon longer than carapace. Pleonites and pleotelson enlarged and enlargement increases distally. Pleotelson apex blunt.

Antennule (Fig. 3B) shorter than cephalothorax. Article 1 longer than rest of antennule, with 3 simple median and 3 simple distal setae. Article 2 less than half-length of article 1, with 3 simple distal setae. Article 3 less than half length of article 2, with 1 simple median and 2 simple distal setae. Article 4 longer than article 3, with 1 long and 1 small simple distal setae. Article 5 minute, with 3 simple setae.

Antenna (Fig. 3C) as long as combined length of antennule article 1 and 2. Article 1not recovered or illustrated, but only marginally broader than following articles. Article 2 longer than article 3, with 1 simple distal seta. Article 3 shorter than article 5, with 1simple distal seta. Article 4 longer than other articles, with 1 simple distal seta. Article 5 shorter than article 1, with 1 distal simple seta. Article 6 minute with 1 simple long and 2 small simple setae.

Labrum (Fig. 3D) setose and with rounded apex.

Mandibles with relatively broad molar process armed with distal denticles and spiniform process. Left mandible (Fig. 3F) lacinia mobilis thinner than incisor, incisor divided into 2 pointed spines. Right mandible (Fig. 3G) incisor broad and blunt, with 2 dorsal spines.

Maxillule (Fig. 3H) endite with 11 distal spiniform setae, 2 of which are bifurcate. Palp as long as endite.

Maxilla not recovered.

Labium not recovered.

Maxilliped (Fig. 3E) endites smooth. Palp article 1 with denticulated scales but no setae; article 2 with 1 thick setulated and 2 simple inner setae and denticulated scales; article 3 with 3 thick inner setae and denticulated scales; article 4 with 4 distal thick inner setae and 1 small outer seta.

Epignath not recovered.

Cheliped (Fig. 3I) basis divided unequally by sclerite, shorter than carpus. Merus triangular with 1 ventral seta. Carpus as long as propodus including fixed finger, with 1dorsal seta. Propodus slender with 1 small ventral seta. Fixed finger with 1 ventral seta and 3 setae on inner margin. Dactylus with strongly curved tip.

Pereopod 1 (Fig. 4A) coxa small. Basis longer than 3 succeeding articles combined, smooth. Ischium with 1 ventral setulose spiniform seta. Merus longer than carpus, widening distally and with 1 spiniform setulose distal setae. Carpus two- thirds length of propodus, with 1 spiniform setulose distal seta. Propodus shorter than half length of basis, with 1 simple and 2 serrated spiniform distal setae. Dactylus and unguis longer than propodus.

Pereopod 2 (Fig. 4B) as pereopod 1except: Ischium smooth. Carpus with 2 setulose spiniform distal setae. Propodus with 2 setulose spiniform distal setae.

Pereopod 3 (Fig. 4C) basis with 2 medial sensory and 2 simple setae. Ischium with 1simple seta. Merus with 2 setulose spiniform distal seta. Carpus with 1 simple and 3 setulose spiniform distal setae. Propodus with 2 setulose spiniform and 1 serrated spiniform distal setae and small distal spines. Dactylus with gland duct opening at unguis insertion. Unguis setulose.

Pereopod 4 (Fig. 4D) as pereopod 3 except: Basis with 2 medial sensory setae only. Ischium smooth. Carpus with 1 simple and 1 setulose spiniform distal setae.

Pereopod 5 (Fig. 4E) as pereopod 3 except: Basis smooth. Carpus with 1 simple, 1 spiniform and 2 setulose spiniform distal setae.

Pereopod 6 (Fig. 4F) similar to pereopod 3 except: Basis and ischium smooth. Propodus with 1 setulose spiniform and 1 serrated spiniform distal setae and several small spines.

Uropods (Fig. 3J) short and stubby. Protopod smooth Endopod with 2 articles, article 1 with 1 simple distal seta; article 2 with 4 simple distal setae. Exopod minute, with 2 simple distal setae.

Discussion

The bifurcate terminal setae of the maxillule of these two new species are unusual. Apart from *Isopodidus janum* and *Cetiopyge mira,* these setae have been reported from *Collettea minima* Hansen, 1913 (see Larsen 2000), *Curtichelia expressa* Kudinova-Pasternak, 1987 *Arthrura andriashevi* Kudinova-Pasternak 1966 and *Parafilitanais mexicana* Larsen, 2002. The character does not appear to be present in other species of the above mentioned, genera. These seemingly unrelated species do, however, all inhabit deep water and it is probable that this setal character has a wider occurrence in the deep-sea Tanaidacea than currently recognized.

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Literature Cited

Bird, G. J., & D. M. Holdich. 1988. Deep-sea Tanaidacea (Crustacea) of the north-east Atlantic: the tribe Agathotanaini.—Journal of Natural History 22:1591–1621.

Dana, J. D. 1849. Conspectus Crustaceorom, Conspectus of the Crustacea of the Exploring Expedition.—American Journal of Science 2:424–428.

Gardiner, L. F. 1975. The systematics, postmarsupial development and ecology of the deep-sea family Neotanaidae (Crustacea: Tanaidacea).—Smithsonian Contributions to Zoology 170:1–265.

Hansen, H. J. 1913. Crustacea, Malacostraca. II.—Danish Ingolf Expedition 3:1–127.

Kudinova-Pasternak, R. K. 1966. On a new abyssal tanaidacean from the Pacific *Arthrura andriashevi* n.gen., n.sp.—Crustaceana 12:257–260.

———. 1987. Les genres nouveaux des Tanaidacea (Crustacea) du basin de Madagascar de L'Ocean Indien.—Zoologicheskii Zhurnal 66:28–36.

Kussakin, O. G., & L. A. Tzareva. 1974. A new genus of Tanaidacea from the Antarctic.—Zoologicheskii Zhurnal 53:125–128.

Lang, K. 1968. Deep-sea Tanaidacea.—Galathea Reports 9:23–209.

Larsen, K. 2000. Revision of the genus *Collettea* (Crustacea: Tanaidacea).—Invertebrate Taxonomy 14:681–693.

———. 2001. Morphological and molecular investigation of polymorphism and cryptic species in tanaid crustaceans: implications for tanaid systematics and biodiversity estimates.—Zoological Journal of the Linnean Society 131:353–379.

———. 2002. Tanaidacea (Crustacea: Peracarida) of the Gulf of Mexico X: the question of being male.—Gulf and Caribbean Research 14:53–66.

———, & G. D. F. Wilson. 2002. Tanaidacean phylogeny. The first step: the superfamily Paratanaoidea.–Journal of Zoological Systematics and Evolutionary Research (in press).

Meyer, G., & R. W. Heard. 1989. Tanaidacea (Crustacea: Peracarida) of the Gulf of Mexico. VII. *Atlantapseudes lindae,* n. sp. (Apseudidae) from the continental slope of the northern Gulf of Mexico.—Gulf Research Reports 8:67–105.

Pequegnat, W. E., B. J. Gallaway, & L. H. Pequegnat. 1990. Aspects of the ecology of the deep-water fauna of the Gulf of Mexico.—American Zoologist 30:45–64.

Sars, G. O. 1882. Revision af gruppen Chelifera med characteristik af nye herhen hørende arter og slægter.—Archiv for Matematik og Naturvidenskab 7:1–54.

Sieg, J., & R. W. Heard. 1989. Tanaidacea (Crustacea: Peracarida) of the Gulf of Mexico. VI. On the genus *Mesotanais* Dollfus, 1897 with descriptions of 2 new species, *M. longisetotus* and *M. vadicola.*—Gulf Research Report 8:73–95.

Vilskup, B. A., & R. W. Heard. 1989. Tanaidacea (Crustacea: Peracarida) of the Gulf of Mexico. VII. *Pseudosphyrapus siegi,* n.sp. (Sphyrapidae) from the continental slope of the northern Gulf of Mexico.—Gulf Research Reports 8:107–115.